

These data are in line with the well-known test-tube evidence of "phage" inhibition in the presence of leukocytes, erythrocytes, tissue cells, and biological colloids. They also suggest that phagelysis in the gastro-intestinal canal is perhaps illusory.

In waters free from organic matter, little or no multiplication of the added gastro-intestinal bacteria was noted under the temperature conditions of Professor Beard's experiments. On the addition of homologous Twort colloid, negligible increases were noted in "phage" concentration. This never reached a sufficiently high titer to injure the accompanying bacteria. This finding is in accord with the well-confirmed fact that "phage" proliferation is a by-product of bacterial multiplication. Under ordinary test-tube conditions, no "lysis" is expected, except as a result of a marked preliminary increase in homologous bacterial flora.

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### THE USE OF FATTY ACIDS IN THERAPY

Apart from the classical use of fatty acids and their derivatives as physical or chemical carriers of more potent agents, as in the case of ointments, iodized oils and vitamin-containing oils, the fatty acids themselves are more recently coming into increasing use in the treatment of a variety of conditions. Specific fatty acids, or their simple chemical derivatives, have been recognized variously to possess high bactericidal, tonic, sclerosing, cholagogue, peculiar nutritional, vitamin-sparing and toxin-combining capacities, and to be intimately connected with disturbances of metabolism evidenced by skin eruptions or endocrine dysfunction.

The cyclopentenyl ring-containing acids of the chaulmoogra group of oils were found by Walker and Sweeney<sup>1</sup> to be effective in high dilution in preventing the growth of *Mycobacteria*, and the statement in "New and Nonofficial Remedies"<sup>2</sup> that "it is to this property that the beneficial effects of chaulmoogra oil derivatives in leprosy are probably due," has received recent substantiation.<sup>3</sup> The tonic effect of such unsaturate fatty acids as are present in whole cod-liver oil, aside from its vitamin content, has again lately been considered.<sup>4</sup> Na morrhuate, the soap of cod-liver oil fatty acids, has been employed in obliterating varicose veins.<sup>5</sup> The study of the vitamin-sparing action, and peculiar nutritional properties of certain fatty acids under investigation by Evans and Lepkovsky,<sup>6</sup> has added value in that the use of relatively pure fatty acids and glycerids in this work was made possible by elaborate chemical

techniques. The long-recognized cholagogue action of fatty acids may be of more importance in normal metabolism than has been appreciated, through the facilitating of vitamin absorption by the mechanism proposed by Schmidt and Greaves.<sup>7</sup> The toxin-combining power of Na ricinoleate, found to be highest among the soaps, has led to its use by Burger<sup>8</sup> in treatment of toxic irritation of the colon caused by bacterial invasion. The success of treatment with unsaturate fatty acids in infantile eczema apparently depends on the concomitant restoration of the iodine number of blood fatty acids to normal values.<sup>9</sup> The number of unsaturate vegetable oils, used traditionally in the folk medicine of India, Africa and South America for skin affections, is notable. Finally, the short note on the relationship of unsaturate fatty acids to goiter production in experimental animals, reported by McCarrison in India,<sup>10</sup> challenges further research on the influence of these compounds on the endocrines.

Fats are primarily nutrients, and it is not illogical to assume a normal path of metabolism for most fatty acid derivatives. Since certain side actions appear with some fatty acids, however, it is necessary with these medicaments, as with all others,<sup>11</sup> to subject each to a complete pharmacological study before their extended use in human therapy is attempted. If the careful studies of Frazier<sup>12</sup> and of Read<sup>13</sup> had been carried out before proprietary brands of Na chaulmoograte or hydnocarpate were exploited, it is doubtful if their uncontrolled use would have led so quickly to their abandonment. Hemolysis, severe anemia, and nephritis may follow the use of any highly unsaturate oil in quantity; it should be remembered that oxydimethylthiolerucic acid is a most powerful hemolysin,<sup>14</sup> and that this compound is not distantly related to more common unsaturate fatty acids. A pharmacological evaluation of each new purified product should be made before its clinical trial.

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### EMETIN IN AMEBIASIS

Current interest in amebiasis (incorrectly referred to as amebic dysentery, which is but one phase of the symptom complex) has prompted Chicago and other physicians throughout the United States to comment on the clinical handling of patients with *E. histolytica* infection. Regarding therapy, a recent contributor has recom-

<sup>1</sup> Walker, E. L., and Sweeney, M. A.: J. Inf. Dis., 26:233, 1920.

<sup>2</sup> New and Nonofficial Remedies: P. 134, 1933.

<sup>3</sup> Emerson, G. A., Anderson, H. H., and Leake, C. D.: Proc. Soc. Exper. Biol. and Med., 30:150, 1932; 31:18, 272, 1933.

<sup>4</sup> Maignon, F.: Bull. Acad. Vet de France, 5:390, 1932.

<sup>5</sup> Tunick, I. S., and Nach, R.: Ann. Surgery, 95:734, 1932.

<sup>6</sup> Evans, H. M., and Lepkovsky, Samuel: J. B. C., 92:615, 1931; 96:165, 179, 1932.

<sup>7</sup> Schmidt, C. L. A., and Greaves, D.: Proc. Soc. Exper. Biol. and Med., in press.

<sup>8</sup> Burger, G. N.: J. Lab. Clin. Med., 19:234, 1933.

<sup>9</sup> Hansen, A. E.: Proc. Soc. Exper. Biol. and Med., 31:160, 1933.

<sup>10</sup> McCarrison, R.: Ind. J. Med. Res., 21:179, 1933.

<sup>11</sup> Leake, C. D.: J. A. M. A., 93:1632, 1929.

<sup>12</sup> Frazier, C. N.: Proc. Soc. Exper. Biol. and Med., 29:44, 1931.

<sup>13</sup> Read, B. E.: Internat. J. Leprosy, 1:293, 1933.

<sup>14</sup> Burkhardt, L.: Arch. Exp. Path. Pharm., 63:107, 1910.